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G4A AFGL AUD

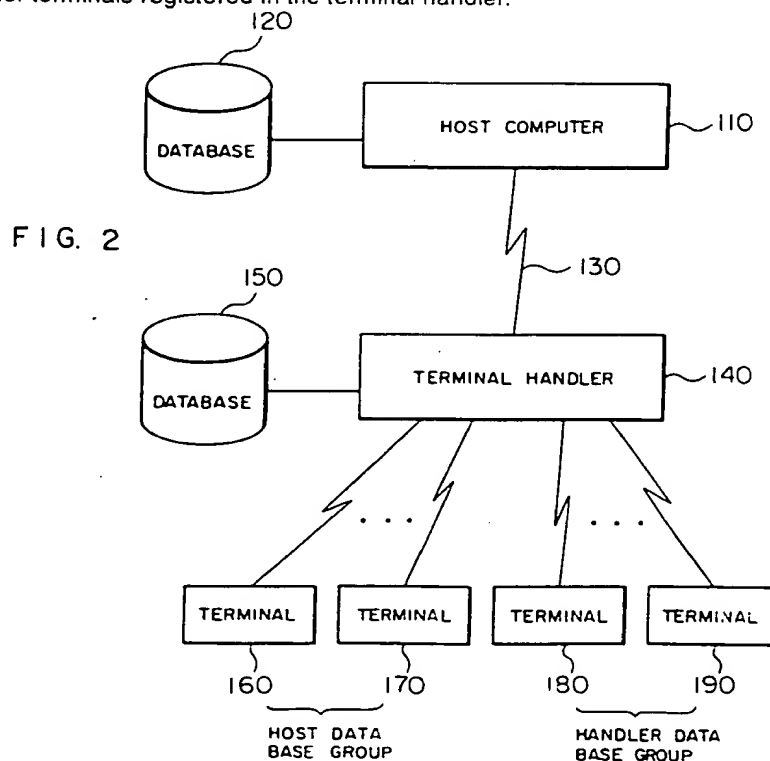
(56) Documents cited  
EP 0225022 A2

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UK CL (Edition J) G4A AFGL AUD, H4P PPBC PPG  
INT CL<sup>4</sup> G06F  
Online databases: WPI

11 WPA 1081

## (54) Method and system for information distribution services

(57) An information service network system includes at least one host computer (110) having a database server function, at least one terminal handler (14) and a plurality of terminals (160-190) connected to the terminal handler through a communication line. When an inquiry data is sent from one of the terminals to one of the host computer and the terminal handler, the terminal handler connected to the terminal receives the inquiry data and sends the received inquiry data to the corresponding terminal handler or host computer. When the terminal handler later receives response data for the inquiry data, it distributes the response data to the terminals which requested the response data, and also distributes the same response data to other terminals registered in the terminal handler.



GB 2 227 585 A

FIG. 1

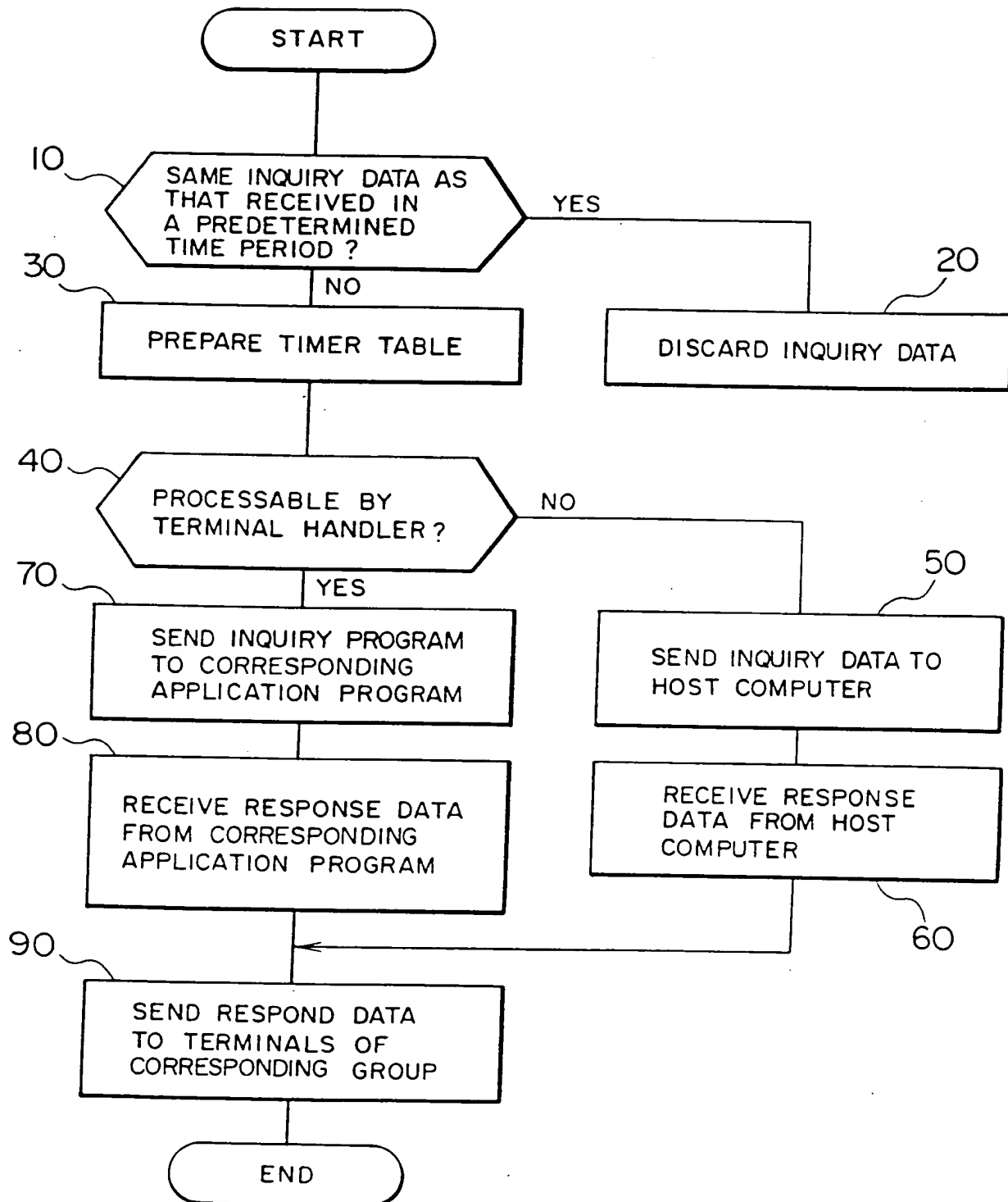


FIG. 3

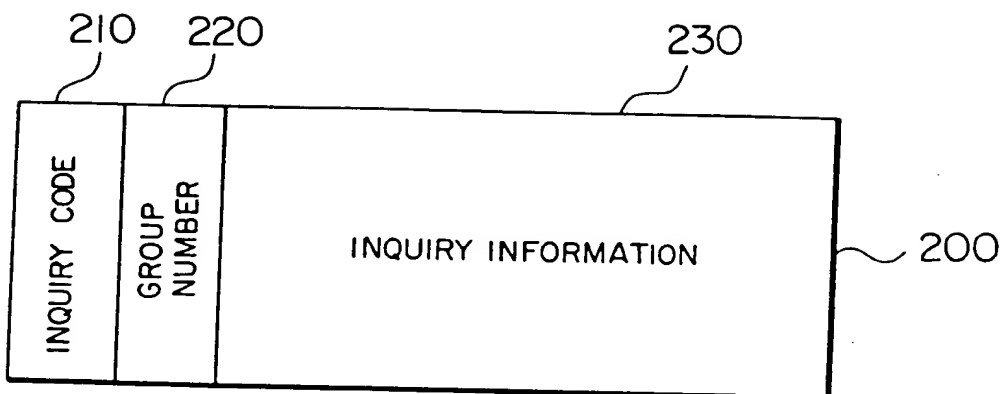


FIG. 4

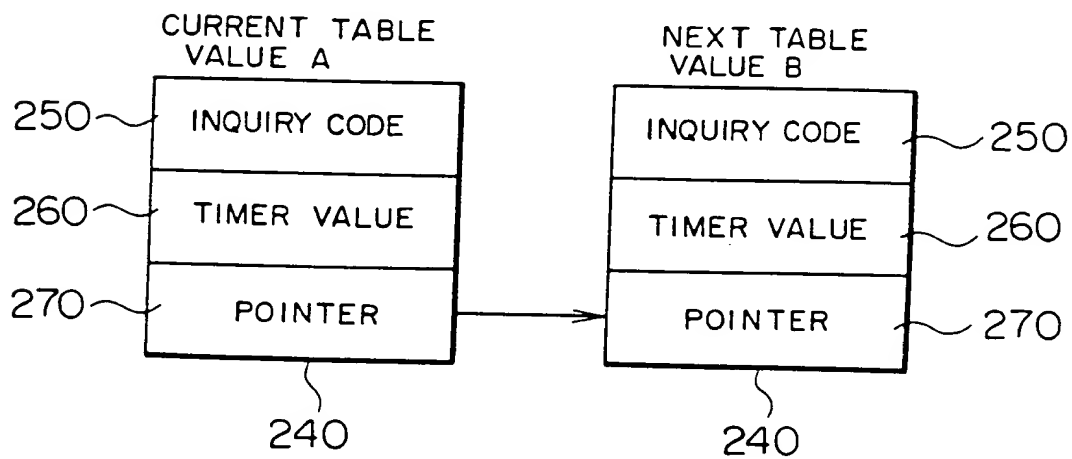


FIG. 5

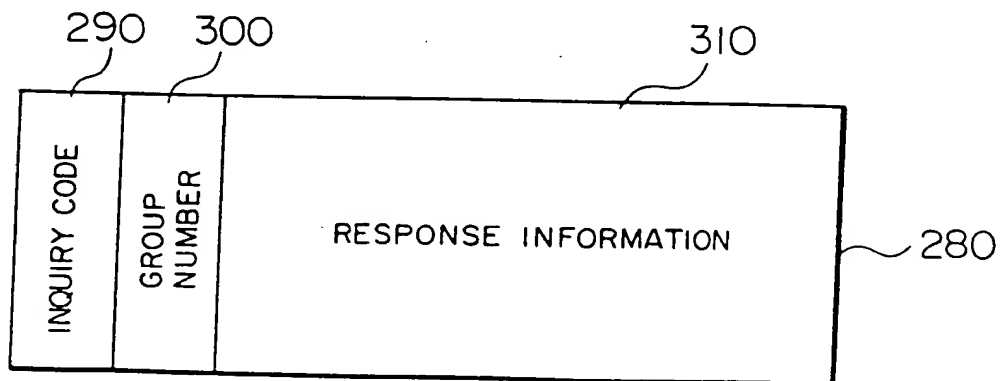


FIG. 6

|     |              |                     |                        |                        |             |                 |
|-----|--------------|---------------------|------------------------|------------------------|-------------|-----------------|
| 320 | GROUP NUMBER | 330<br>INQUIRY CODE | 340<br>TERMINAL NUMBER | 350<br>TERMINAL NUMBER | •   •   •   | TERMINAL NUMBER |
|     |              | •<br>•<br>•         | •<br>•<br>•            | •<br>•<br>•            | •<br>•<br>• | •<br>•<br>•     |
|     |              | INQUIRY CODE        | TERMINAL NUMBER        | TERMINAL NUMBER        | •   •   •   | TERMINAL NUMBER |
| 320 | GROUP NUMBER | •<br>•<br>•         | •<br>•<br>•            | •<br>•<br>•            | •<br>•<br>• | •<br>•<br>•     |
|     |              | INQUIRY CODE        | TERMINAL NUMBER        | TERMINAL NUMBER        | •   •   •   | TERMINAL NUMBER |
|     |              | •<br>•<br>•         | •<br>•<br>•            | •<br>•<br>•            | •<br>•<br>• | •<br>•<br>•     |
| 320 | GROUP NUMBER | INQUIRY CODE        | TERMINAL NUMBER        | TERMINAL NUMBER        | •   •   •   | TERMINAL NUMBER |
|     |              | •<br>•<br>•         | •<br>•<br>•            | •<br>•<br>•            | •<br>•<br>• | •<br>•<br>•     |
|     |              | INQUIRY CODE        | TERMINAL NUMBER        | TERMINAL NUMBER        | •   •   •   | TERMINAL NUMBER |

FIG. 7

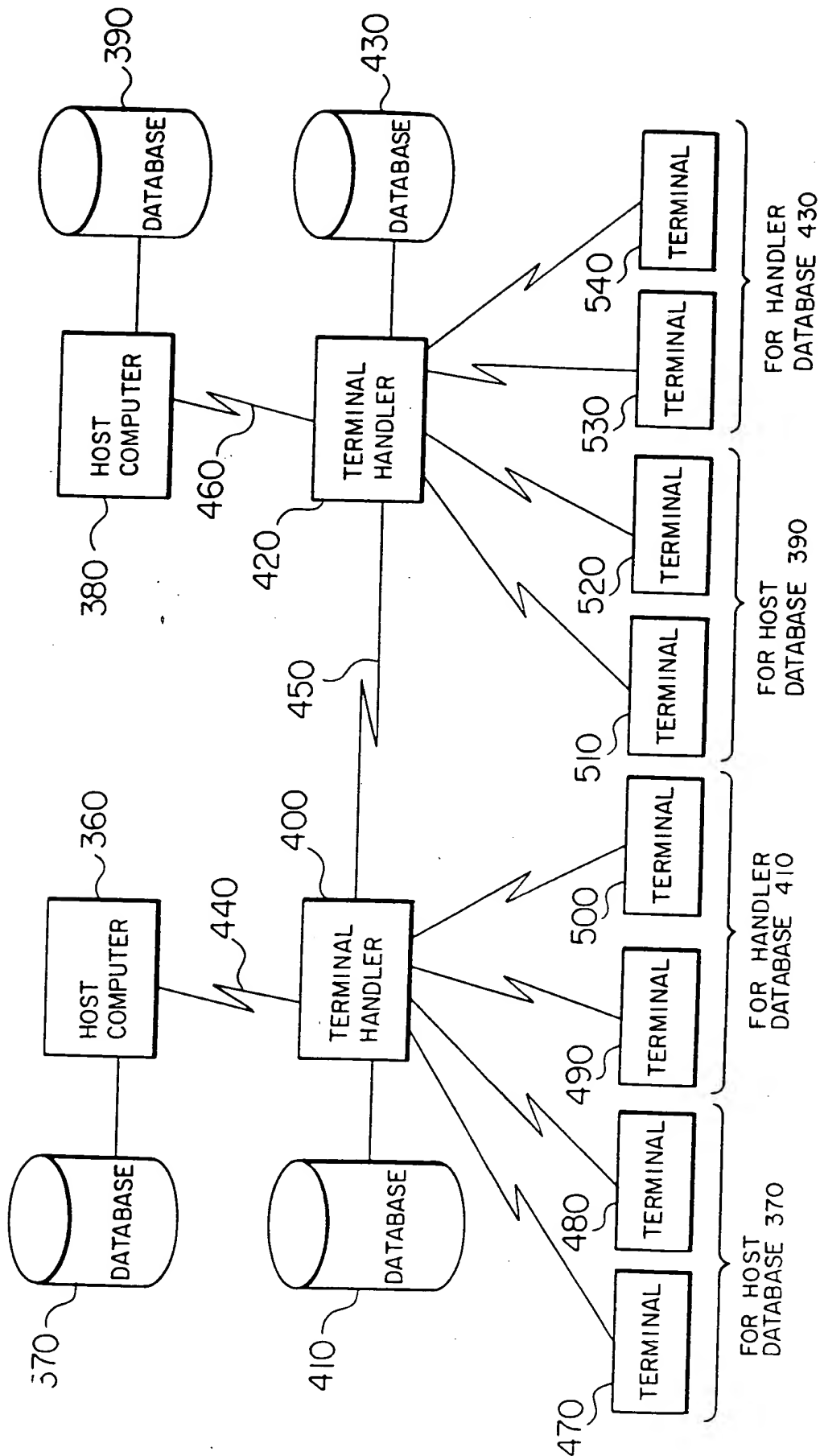


FIG. 8

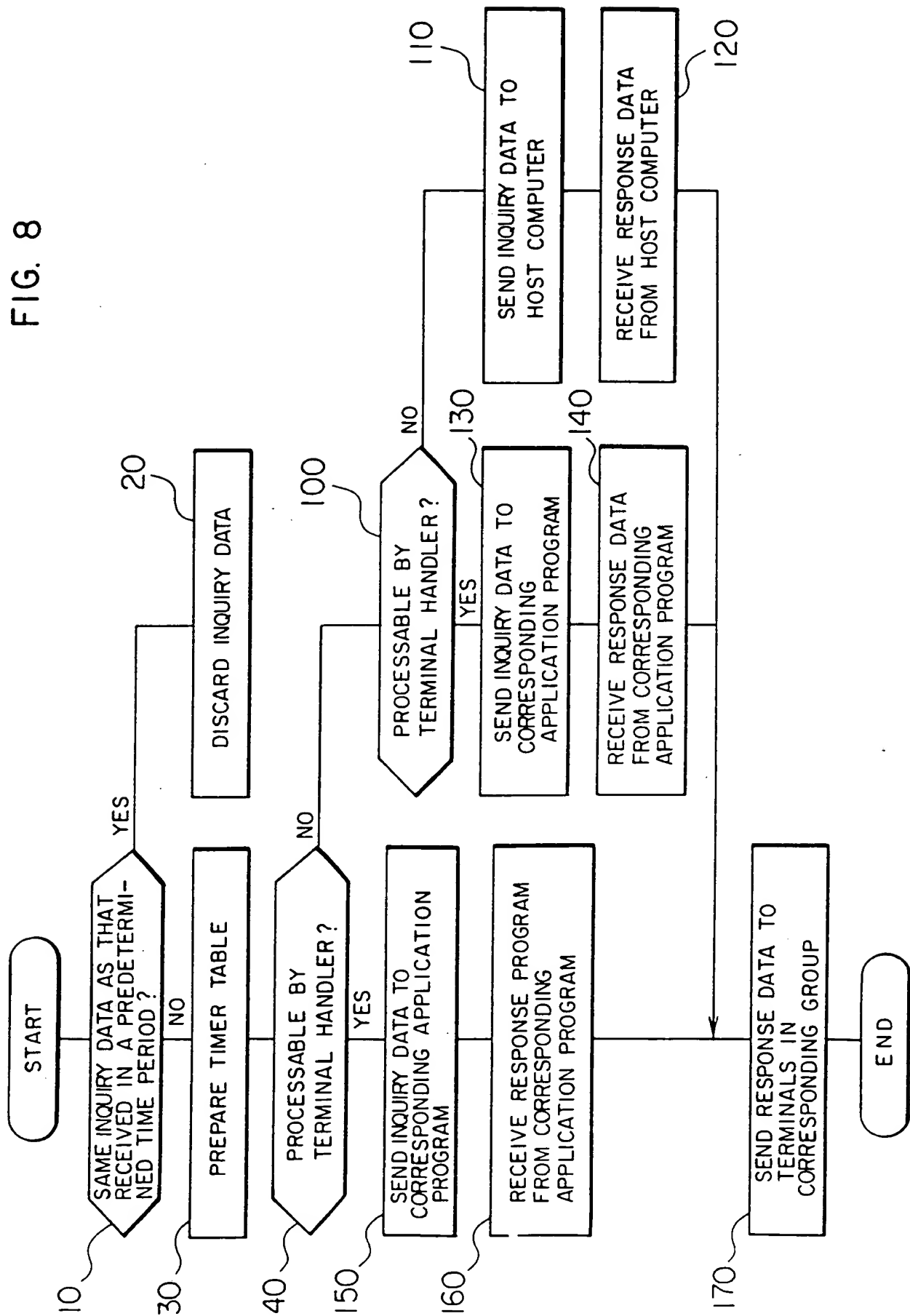


FIG. 9

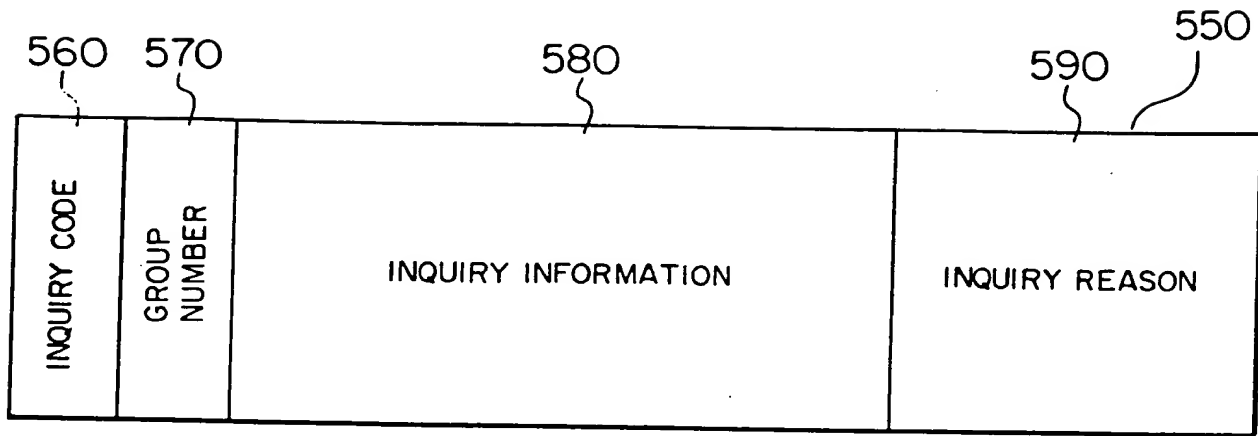


FIG. 10

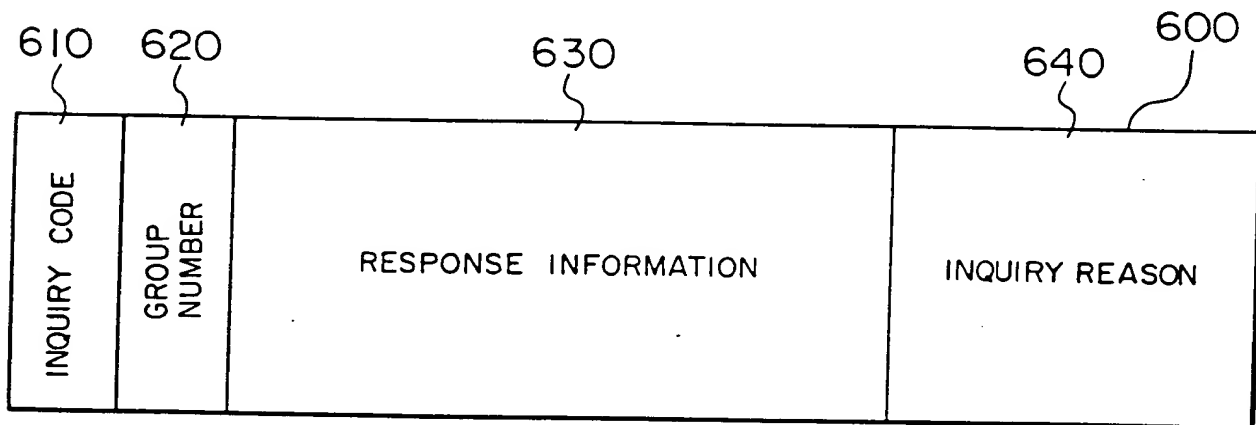


FIG. 12

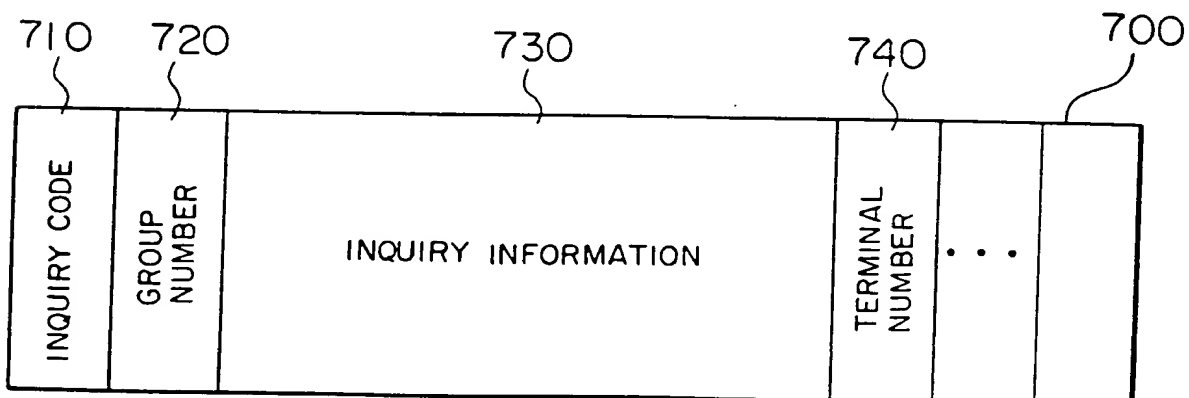




FIG. 11

670 680 690

| GROUP NUMBER |     |  | INQUIRY CODE | SERVICE CLASS | TERMINAL NUMBER |     |     |     |     |
|--------------|-----|--|--------------|---------------|-----------------|-----|-----|-----|-----|
|              |     |  |              |               |                 |     |     |     |     |
| 660          | ... |  | ...          | ...           | ...             | ... | ... | ... | ... |
|              |     |  | ...          | ...           | ...             | ... | ... | ... | ... |
|              |     |  | ...          | ...           | ...             | ... | ... | ... | ... |
| 650          | ... |  | ...          | ...           | ...             | ... | ... | ... | ... |
|              |     |  | ...          | ...           | ...             | ... | ... | ... | ... |
|              |     |  | ...          | ...           | ...             | ... | ... | ... | ... |
|              |     |  | ...          | ...           | ...             | ... | ... | ... | ... |
|              |     |  | ...          | ...           | ...             | ... | ... | ... | ... |
|              |     |  | ...          | ...           | ...             | ... | ... | ... | ... |

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FIG. 13

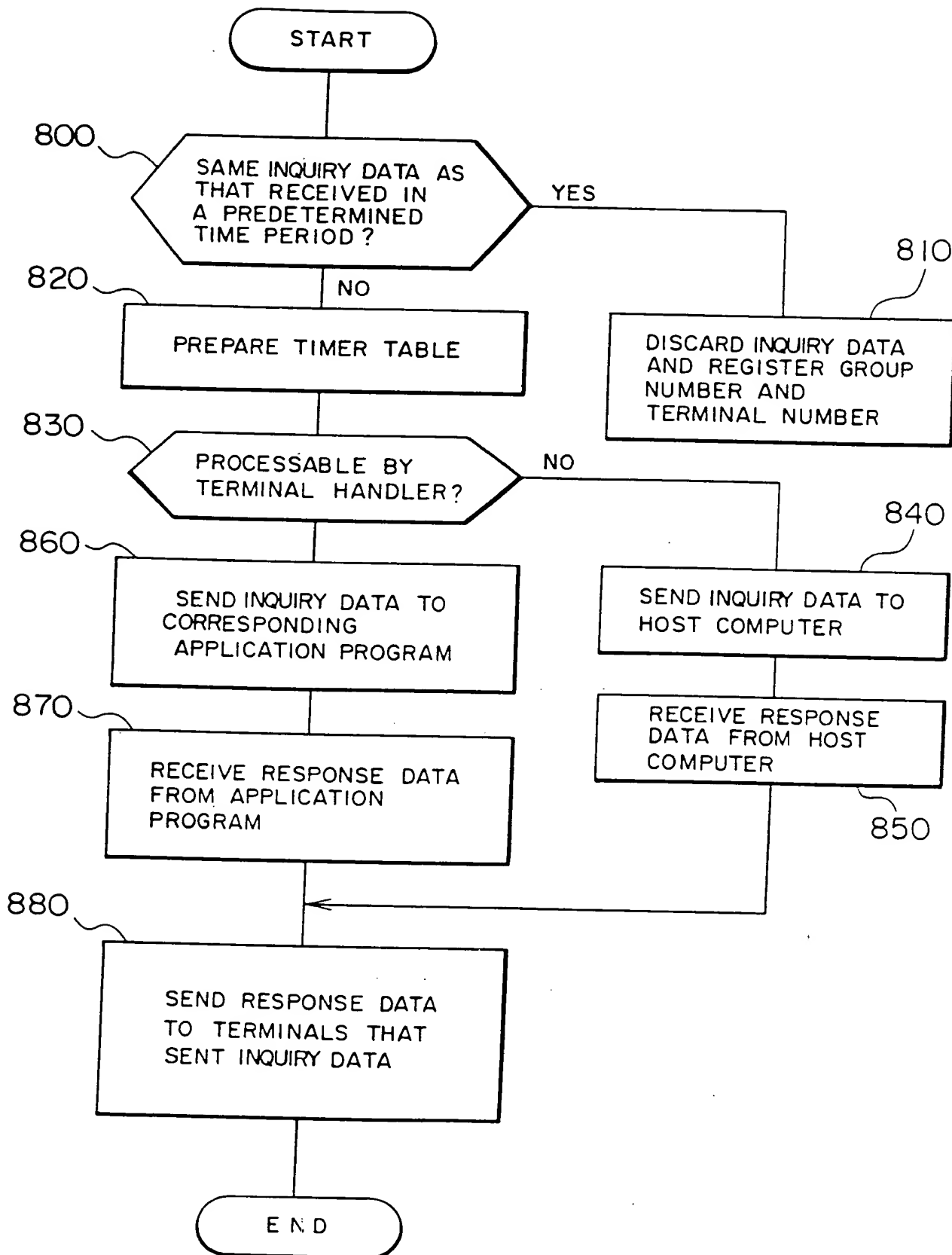


FIG. 14

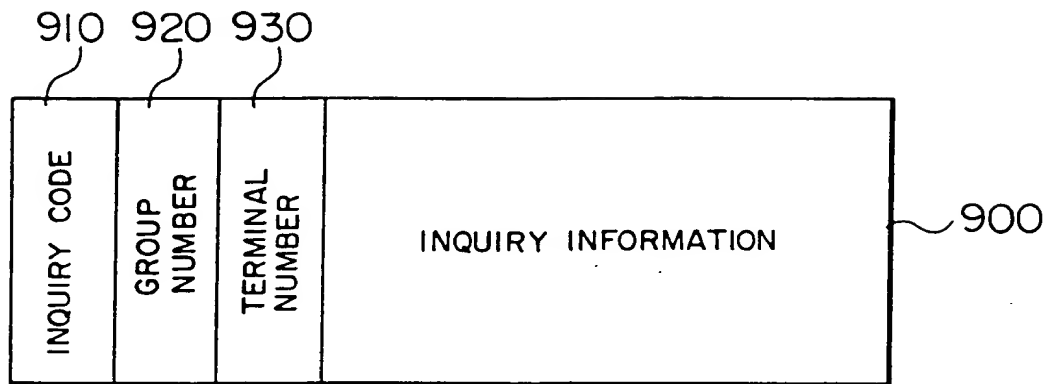


FIG. 15

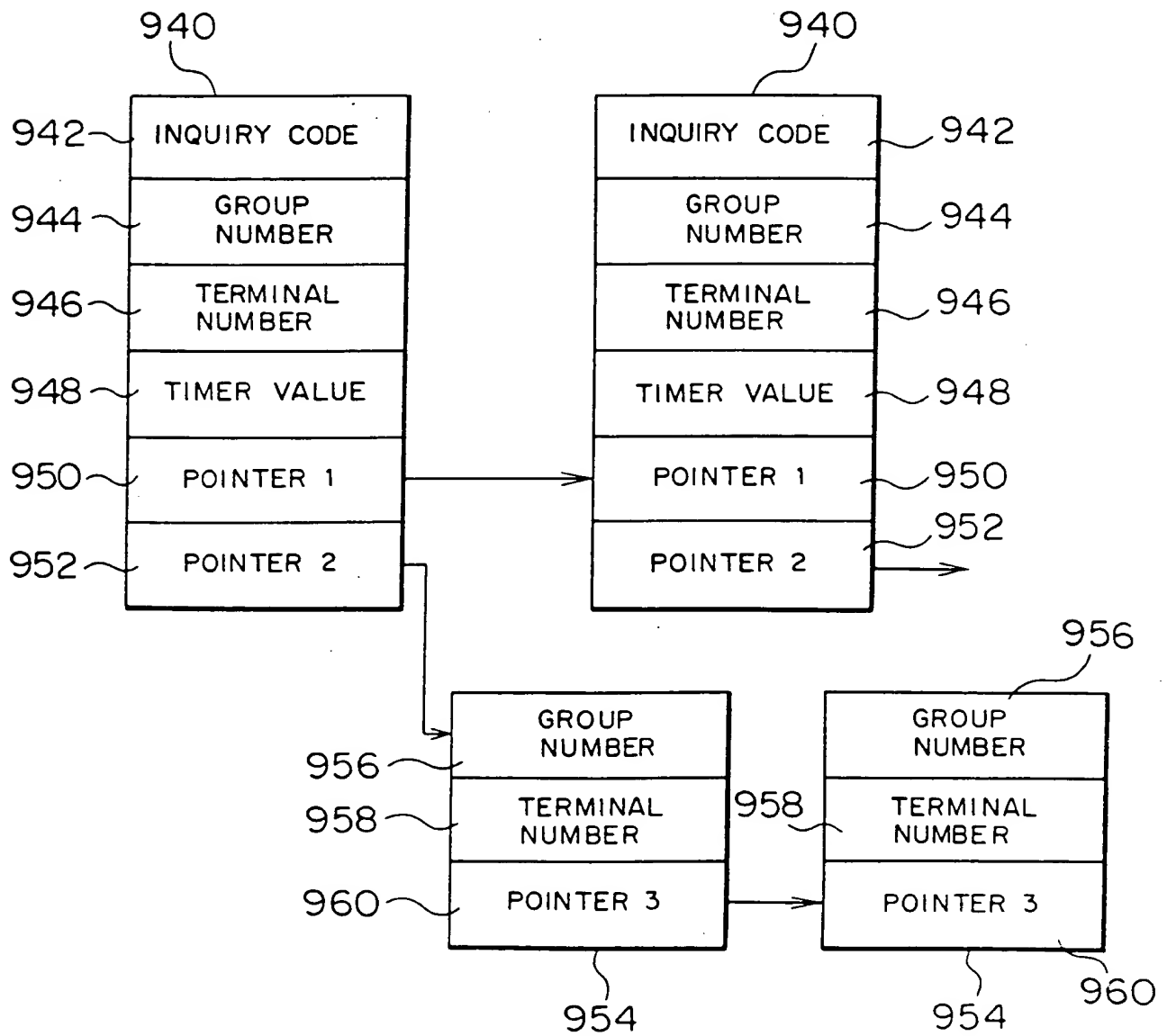
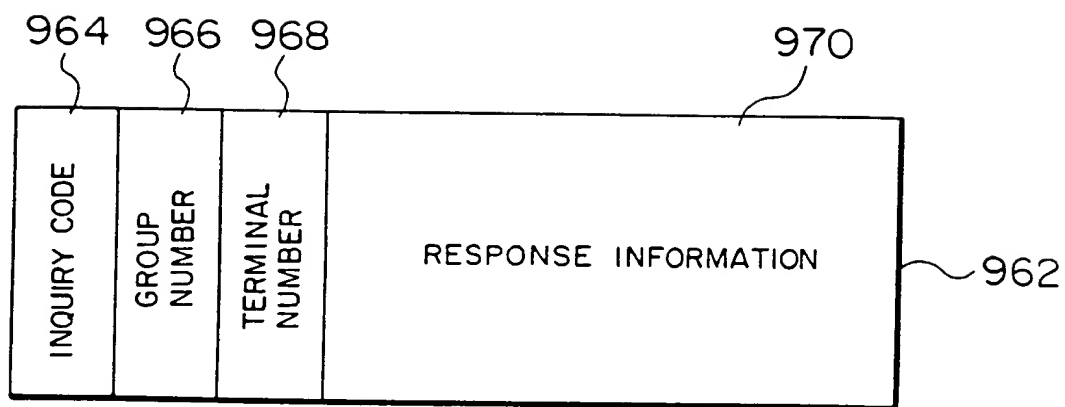


FIG. 16



"METHOD AND SYSTEM FOR INFORMATION DISTRIBUTION SERVICES"

1

The present invention relates to method and system for communication services, and more particularly to method and system for information distribution services suitable for distributing information by efficiently utilizing a communication line.

In a prior art information communication network system, a number of various terminals and networks connected in an on-line mode through communication lines are controlled by using a terminal handler provided between a host computer and a plurality of terminals to conduct various communication services. Response data for inquiry data from one terminal to the host computer or to the terminal handler is transmitted to that terminal to provide an on-line database service. A basic configuration of such an information communication network system is shown in Fig. 2. A host computer 110 is connected to a terminal handler 140 through a communication line 130. Terminals 160 to 190 are connected to the terminal handler 140 through communication lines. A database 120 and a database 150 are installed in the host computer 110 and the terminal handler 140, respectively. Both the host computer 110 and the terminal handler 140 have database server function.

1           For example, when the terminal 140 inquiries  
about information in the database 150 of the terminal  
handler 140 through the communication line, the response  
data is sent only to the terminal 160 which has issued  
5 the inquiry data. An example of such inquiry 1 response  
data transmission is disclosed in "Trend of Standardiza-  
tion of Transaction Processing" by Satoh, Proceedings of  
Information Processing Society of Japan, Vol. 28, No. 4  
(1987) pp. 494-496, in which the inquiry data sending  
10 terminal and the response data sending terminal are  
paired.

          If the same inquiry is also issued from other  
terminal substantially simultaneously, it is necessary  
for the terminal handler 140 to separately process  
15 the same inquiry. Accordingly, the same inquiry data and  
the same response data are transmitted a plurality of  
times through the communication lines, and the utiliza-  
tion factor of the network is lowered. Under such a  
circumstance, in an information service network which  
20 serves stock information, if a stock price of a  
particular brand suddenly changes, there are a lot of rush  
inquiries on the change of price of that brand from  
a plurality of user terminals of the network. In such  
an information service network, the response data to  
25 the inquiry prepared by an expert may be sent to not only  
the terminal which the expert uses but also to the  
terminals of other users who have made a contract  
with the expert so that highly value added information

1 is available to other users. In the above example of  
the stock information service network, the other users  
can get the information on the statistical information  
of the stock price and the anticipation of the future  
5 change which the expert has inquired without inquiring  
by themselves.

In the prior art system, the response data  
is sent back only to the terminal which has issued  
the inquiry data. Accordingly, when a plurality of  
10 terminals issue the same inquiry data substantially  
simultaneously, the plurality of inquiry data of the same  
content are sent to the host computer or the terminal  
handler, which repeatedly processes the same inquiry  
the plurality of times. As a result, the load of the  
15 host computer or the terminal handler increases.  
Further, the plurality of inquiry data of the same content  
and the response data of the same content flow in  
the network. Further, because a number of repetitive  
data flow in the network, the value added information  
20 communication service is not conducted in an efficient  
manner.

It is an object of the present invention to  
provide a method and system for information distribution  
25 services which avoid the concentrated increase of  
load in the host computer and the terminal handler.

It is another object of the present invention

- 1 to provide method and system for information distribu-  
tion services which eliminate flow of unnecessary  
inquiry data and response data in the data network to  
efficiently provide value added information communica-  
5 tion services.

In order to achieve the above objects,  
according to one aspect of the information distribution  
services technique of the present invention, in an  
information communication network system which comprises  
10 at least one host computer having a database server  
function, at least one terminal server and a plurality  
of terminals connected to the terminal handler through a  
communication line, when a inquiry data is sent from one  
of the terminals to the host computer or the terminal  
15 computer, the terminal handler connected to that  
terminal receives the inquiry data, sends the inquiry data  
to the corresponding terminal handler and host computer,  
and then receives the response data for the inquiry data  
and distributes it to the terminal which has issued  
20 the inquiry data as well as other terminals registered  
in a transfer registration table in the terminal handler  
which contains predetermined information distribution  
addressee information.

According to another aspect of the method for  
25 information distribution services of the present  
invention, when one of the host computer and the terminal  
handler receives the inquiry data, value added information  
obtained by processing the information which it contains



1 in itself is distributed as response data, or value  
added information prepared by an expert at a terminal  
is sent to one of the host computer and the terminal  
handler and the value added information is distributed  
5 as it is as response data by the mail server function  
of the host computer or the terminal handler. The  
distributing station has a management table to recognize  
a terminal at which the distributed information is to  
be received.

10 According to an other aspect of the method for  
information distribution services of the present  
invention, a reason for inquiry including explanation  
and comments is added to the inquiry data sent from the  
terminal, and the response data as well as the reason  
15 for inquiry are distributed, value added information  
in different degrees of detail are distributed as  
response data depending on service classes registered  
for the destination terminals, and the destination  
terminals of the response data are dynamically updated.

20 According to a further aspect of the method  
for information distribution services, when inquiry  
data of the same content are sent from a plurality of  
terminals to the terminal handler in a predetermined  
time period, only one inquiry data is sent to the host  
25 computer and the response data from the host computer  
is distributed to all terminals which have issued the  
inquiry data. As a result, the concentration of the load  
to the host computer by the inquiry data of the same

1 content is relieved.

The operations of the present invention are now explained. When the inquiry data from the terminal is received by the terminal handler, the terminal handler reads a inquiry code in the inquiry data to check whether it has received the query data of the same inquiry code in a predetermined time period, for example, several seconds. If it has received, it discards the current inquiry data. If it has not received, it checks  
10 if it can process the inquiry data by itself, and if it cannot process the inquiry data even with the aid of the data server function which it has, it sends the inquiry data to the host computer. When the response data prepared by the host computer by utilizing its data  
15 server function is sent back from the host computer, the terminal handler stores the inquiry code in the response data, a group number and the terminals which belong to the group, compares them with the table contained in the terminal handler, determines the  
20 terminals to which the response data is to be sent based on the result of comparison, and sequentially sends the response data to the identified terminals. If the terminal handler can process the inquiry data by itself, it delivers the inquiry data to an application  
25 program of the terminal handler. The application program may be a statistics processing program or a data processing program. When the terminal handler receives the response data prepared by the application

1 program, it determines the terminals to which the  
response data is to be sent, by comparing the inquiry  
code in the response data and the group number with  
the table in the terminal handler which contains the  
5 group number and the terminals which belong to the  
group, and sequentially sends the response data to  
the identified terminals.

Through the above process, minimum amount  
of necessary inquiry data and response data are trans-  
10 mitted between the host computer and the terminal  
handler. Further, minimum amount of necessary response  
data is transmitted between the terminal handler and  
the terminals.

One of the terminals which belong to one  
15 terminal group sends inquiry data with the inquiry code  
which instructs to the host computer or the terminal  
handler to distribute the value added information  
obtained by processing the self-contained information  
by itself to other terminals of the same group as the  
20 response data so that the other terminals can get the  
value added information without inquiring by themselves.

Further, one of the terminals which belong to  
one terminal group prepares value added information  
by itself and sends to the host computer or the  
25 terminal handlers the inquiry data which includes the  
inquiry code for instructing to distribute the value  
added information to other terminals in the group as  
the response data so that the other terminal can get

the value added information without inquiry by themselves.

The present invention will now be described in greater detail by way of example with reference to the accompanying drawings, wherein:

5           Fig. 1 is a process flow chart of an information distribution services system in accordance with one embodiment of the present invention;

          Fig. 2 is a diagram showing a basic prior art configuration of an information communication network  
10   system;

          Fig. 3 shows a inquiry data format in the first embodiment;

          Fig. 4 shows a configuration of a timer table;

          Fig. 5 shows a response data format;

15           Fig. 6 shows a terminal table;

          Fig. 7 is a diagram showing a configuration of an information communication network system which is an application of Fig. 1;

          Fig. 8 is a process flow chart of an information  
20   distribution services system in the information communication network system of Fig. 7;

          Fig. 9 shows a inquiry data format in a second embodiment of the present invention;

          Fig. 10 shows a response data format in the second  
25   embodiment of the present invention;

          Fig. 11 shows a terminal table in the second embodiment of the present invention;

          Fig. 12 shows a inquiry data format in a third

embodiment of the present invention;

Fig. 13 is a process flow chart for identical inquiry in a fourth embodiment of the present invention;

Fig. 14 shows an example of a data format used in the embodiment of Fig. 13;

Fig. 15 shows an example of a timer table used in the embodiment of Fig. 13; and

Fig. 16 shows an example of a response data format used in the embodiment of Fig. 13.

Embodiments of the present invention are now explained in detail with reference to the accompanying drawings.

A basic configuration of the embodiment is similar to that shown in Fig. 2 and hence it is not shown and only the difference is explained below. In the present embodiment, the terminals of the information network are grouped. The terminals 160 to 170 belong to a group 1, and the terminals 180 to 190 belong to a group 2. The group 1 inquires about the information of the database 120 of the host computer 110, and the group 2 inquires about the information of the database 150 of the terminal handler 140. Actually, each terminal need not know where necessary information is but directory information is stored in memories of the host computer 110 and the terminal handler 140 at the time of start of the system. For example, in the application of stock news information services,

1 1000 - 2000 terminals are connected to each terminal  
handlers.

Fig. 3 shows a inquiry data format sent back  
from the terminal.

5 The inquiry data 200 comprises a coded form  
of the inquiry, that is, a inquiry code 210 representing  
a inquiry pattern, a group number 220 representing a  
group number which the terminal belongs to, and inquiry  
information 230.

10 Fig. 4 shows a format of a timer table for  
monitoring time by the terminal handler for a inquiry  
from the terminal. In Fig. 4, a current value A of the  
table is updated to a value B.

The timer table 240 includes a inquiry code  
15 250 representing a inquiry pattern, a timer value 260  
for setting the time at which the inquiry data was  
received or a predetermined time, and a pointer 270 to  
point a next timer table.

Fig. 5 shows a format of the response data  
20 from the host computer or the terminal handler.

The response data 280 includes a inquiry code  
290 representing a inquiry pattern which a user selects  
from a query data menu of, for example, current, high  
and low prices of stocks, a group number 300 representing  
25 a group name (number) which the terminal belongs to,  
and response information 310 to be sent back.

Fig. 1 shows a process flow chart of the  
information distribution services system in one

1 embodiment of the present invention. It shows a process  
when the inquiry data is received by the terminal handler  
140 in the information network of Fig. 2 when the  
terminals are grouped. The operation of the present  
5 embodiment is now explained with reference to the flow  
chart shown in Fig. 1.

Whether the received inquiry data 200 is  
identical to the inquiry data received in the predetermined  
time period or not is checked by comparing the inquiry  
10 code 210 of the received inquiry data 200 shown in Fig. 3  
with the timer table 240 of Fig. 4 (step 10). If it  
is identical, the received inquiry data 200 is discarded  
(step 20). If it is not identical, the timer table  
240 is newly prepared and the inquiry code 250 and the  
15 timer value 260 are registered therein, and it is  
connected to a timer queue (step 30). The predetermined  
time is a wait limit time which is determined by an  
empirical law of a user. Usually, it is in the order  
of several seconds.

20 Then, whether the response processing in the  
terminal handler 140 is possible or not is checked  
(step 40). If it is not possible, the inquiry data 200  
is transferred to the host computer 110 through the  
communication line 130 (step 50). When the response  
25 data 280 shown in Fig. 5 is later received from the  
host computer 110 (step 60), the process proceeds to  
a step 90.

In the step 40, if the processing in the

1 terminal handler 140 is possible, the inquiry data 200  
is sent to the application program of the terminal  
handler (step 70). The processing of the inquiry data  
by the application program may be done by using the  
5 technique of "Message Control System" disclosed in  
Japanese patent Application Nos. 63-265246 and 63-268024  
filed on October 22, 1988 and October 26, 1988, respec-  
tively and assigned to the present assignee. When  
the response data is later received from the application  
10 program (step 80), the response data 280 is sequen-  
tially sent to the terminals of the group in accordance  
with the table 320 shown in Fig. 6 and provided in the  
terminal handler 140, the inquiry code 290 of the  
received response data 280 and the group number 300  
15 (step 90).

The table 320 is prepared prior to the start  
of operation of the network. It is generally called  
a system generation operation. Assuming that one  
group conducts information services of stock values, the  
20 terminal of an expert who provides expert information  
on the stock values and terminal numbers of users  
who want to receive the expert information are registered  
in that group by contract. Accordingly, the users  
can get the value added information, without inquiring  
25 by themselves, through the above inquiry data processing  
if they are registered.

Assuming that data for inquiring about  
information in the database 120 of the host computer



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1 110 is sent from the terminal 160, and that the inquiry  
code 210 of the inquiry data 200 from the terminal 160  
is "1" to indicate a inquiry pattern (the inquired  
information is present in the database 120 of the host  
5 computer 110) and the group number 220 is "1" indicating  
the group 1, the processing for the inquiry data 200 is  
explained in detail below.

When the inquiry data 200 arrives at the  
terminal handler 140 from the terminal 160, whether  
10 the inquiry data of the same inquiry code has been received  
in the predetermined time period or not is checked by  
using the timer table 240 based on the inquiry code 210.  
If it has been received, and if the inquiry data of  
the same inquiry code is present in the timer table  
15 queue, the inquiry data 200 is discarded. If it has not  
been received, the timer table 240 is newly prepared  
and the inquiry code 210 of the received inquiry data 200  
is set into the inquiry code 250 of the timer table 240.  
The predetermined timer value is set into the timer  
20 value 260 of the timer table 240 and it is connected  
to the end of the timer table queue by a pointer 270.  
The timer value 260 is automatically decremented, and  
when it reaches "0", the entire table is deleted from  
the timer queue. Then, the value of the inquiry code  
25 210 is examined. Since it is "1" in the present  
example, the inquiry data is transferred to the host  
computer 110. The host computer 110 retrieves the  
information from the database 120 to prepare the

1 response data. When the terminal handler 140 receives  
the response data 280 shown in Fig. 5 from the host  
computer 110, the terminal handler determines the  
terminals to which the response data 280 is to be  
5 distributed, that is, the terminals 160 to 170 in the  
present example, based on the inquiry code 290 and the  
group number 300 of the response data 280 and the table  
320 of Fig. 6 which includes the group number 330,  
the inquiry code 340 and the terminal number 350 which  
10 belongs to the group, and sequentially sends the  
response data 280 to those terminals.

Let us consider a case where data for  
querying about information in the database 150 of the  
terminal handler 140 is sent from the terminal 180 to  
15 the terminal handler 140. Let us assume that the inquiry  
code 210 of the inquiry data 200 from the terminal 180  
is "2" indicating certain inquiry pattern (the inquired  
information is present in the database 150 of the  
terminal handler 140) and the group number 220 is "2"  
20 indicating the group 2. The processing in the terminal  
handler 140 for the inquiry data 200 is now explained  
in detail.

When the inquiry data 200 arrives at the  
terminal handler 140 from the terminal 180, whether the  
25 inquiry data of the same inquiry code has been received  
in the predetermined time period or not is checked by  
using the timer table 240 based on the value of the  
query code 210. If it has been received, the inquiry

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1 data 200 is discarded. If it has not been discarded,  
the timer table 240 is prepared in the same manner as  
that described before. Then, the value of the inquiry  
code 210 is examined. Since it is "2" in the present  
5 example, the inquiry data is delivered to the correspond-  
ing application program (AP) in the terminal handler  
140. In the application program, the information is  
retrieved from the database 150 and the response data  
is prepared. When the response data 280 is received  
10 from the application program, the terminals to which  
the response data is to be distributed, that is, the  
terminals 180 to 190 in the present example, are  
determined in accordance with the inquiry code 290 and  
the group number 300 and the table 320, and the  
15 response data 280 is sequentially sent to those  
terminals.

In the above processes, the host computer  
or the terminal handler conducts the information  
retrieval. Alternatively, value added information  
20 obtained by processing the information contained in  
the host computer 110 or the terminal handler 140 may  
be distributed as the response data 280 by setting  
inquiry pattern of different type into the inquiry code  
210 of the inquiry data, or the value added information  
25 (prepared in the terminal) set in the inquiry information  
230 of the inquiry data 200 may be distributed as it is  
as the response data 280.

Fig. 7 shows a configuration of an information

1 communication network system comprising two host  
computers, two terminal handlers and four terminal  
groups.

A host computer 360 and a terminal handler  
5 400, and a host computer 380 and a terminal handler 470  
are connected to a communication line 440 and a communi-  
cation line 460, respectively. the terminal handlers  
400 and 420 are interconnected through a communication  
line 450. A database 370 is connected to the host  
10 computer 360, a database 390 is connected to the host  
computer 380, a database 410 is connected to the  
terminal handler 400, and a database 430 is connected  
to the terminal handler 420. Terminals 470 to 500 are  
connected to the terminal handler 400, and terminals  
15 510 to 540 are connected to the terminal handler 420.  
The terminals 470 to 480 belong to a group 1, the  
terminals 490 to 500 belong to a group 2, the terminals  
510 to 520 belong to a group 3, and the terminals 530  
to 540 belong to a group 4. The group 1 inquires  
20 about information of the database 370 of the host  
computer 360, the database 390 of the host computer 380  
and the database 430 of the terminal handler 420. The  
group 2 inquires about information of the database 410  
of the terminal handler 400, the database 390 of the  
25 host computer 380 and the database 430 of the terminal  
handler 420. The group 3 inquires about information of  
the database 390 of the host computer 380, the database  
370 of the host computer 360 and the database 410 of

1 the terminal handler 400. The group 4 inquires about  
information of the database 430 of the terminal handler  
420, the database 370 of the host computer 360 and  
the database 410 of the terminal handler 400.

5 When the terminals of the groups 1, 2, 3 and  
4 inquires about information of the database 370 of the  
host computer 360, the database 410 of the terminal  
handler 400, the database 390 of the host computer 380  
and the database 430 of the terminal handler 420,  
10 respectively, it is done in accordance with the flow  
chart shown for the embodiment of Fig. 1. The file  
transfers between the host computer and the terminal  
handler and between the terminal handlers may be done  
in accordance with the technique disclosed in Japanese  
15 patent application No. 63-65398 filed on March 25,  
1988 and assigned to the present assignee.

Fig. 8 shows a process flow chart of an  
information distribution services system which is an  
application of the embodiment of Fig. 1. It shows the  
20 processing in the reception of inquiry data at a plurality  
of terminal handlers in the information communication  
network system of Fig. 7. The operation of the  
application is now explained with reference to the  
flow chart of Fig. 8.

25 Whether the inquiry code 210 of the inquiry data  
200 shown in Fig. 3, received by the terminal handler  
400 (or the terminal handler 420 depending on the  
terminal connected) is identical to the inquiry data which

1 has been received in the predetermined time period or  
not is checked by the timer table 240 shown in Fig. 4  
(step 10). If it is identical, the received inquiry  
data 200 is discarded (step 20). If it is not identical,  
5 the timer table 240 is newly prepared, the inquiry code  
250 and the timer value 260 are registered therein,  
and it is connected to the timer queue (step 30).  
Then, whether the processing by the terminal handler 400  
is possible or not is checked (step 40). Those steps  
10 are the same as those of Fig. 1. In the step 40, if the  
processing is not possible, the inquiry data 200 is  
sent to the terminal handler 420 through the communica-  
tion line 450 to check whether the processing by the  
terminal handler 420 is possible or not (step 100).  
15 If it is not possible, the inquiry data 200 is sent to  
the host computer 380 (step 110). When the response  
data 280 is received from the host computer 380, it is  
sent to the terminal handler 400 through the communica-  
tion line 450 (step 120). Then, the process proceeds  
20 to a step 170.

In the step 100, if the processing by the  
terminal handler 420 is possible, the inquiry data 200  
is sent to the corresponding application program (step  
130). When the response data 280 is received from  
25 the application program, it is sent to the terminal  
handler 400 through the communication line 450 (step  
140). Then, the process proceeds to the step 170.

In the step 40, if the processing by the

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1 terminal handler 400 is possible, the inquiry data 200  
is sent to the corresponding application program (step  
150). When the response data 280 is received from  
the application program (step 160), the response data  
5 280 is sequentially sent to the terminals in the group  
based on the table 320 and the inquiry code 290 and  
the group number 300 of the response data 280 (step  
170).

In the information network of Fig. 7, let us  
10 consider a case where data for inquiring about informa-  
tion in the database 390 of the host computer 380 is  
sent from the terminal 470. In the inquiry data 200  
from the terminal 470, the inquiry code 210 is "3" to  
indicate the inquiry pattern (the inquired information  
15 is present in the database 390 of the host computer 380),  
and group number 220 is "1" indicating the group "1".  
The processing for the inquiry data is now explained in  
detail below.

When the inquiry data 200 arrives at the  
20 terminal handler 400 from the terminal 470, whether the  
inquiry data of the same inquiry code has been received  
in the predetermined time period or not is checked by  
the timer table 240 based on the value of the inquiry  
code 210. If it has been received, the inquiry data is  
25 discarded. If it has not been received, the timer  
table 240 is prepared and the inquiry code 210 of the  
currently received inquiry data 200 is set into the inquiry  
code 250 of the time table 240. A predetermined timer

1 value is set into the timer value 260 of the table 240  
and it is connected to the end of the timer table  
queue by using the pointer 270. Then, the value of the  
inquiry code 210 is examined. Since it is "3" in the  
5 present example, the inquiry data is transferred to  
the terminal handler 420 through the communication line  
450. The terminal handler 420 examines the value of  
the inquiry code 210. Since it is "3", the inquiry data  
is transferred to the host computer 380. In the host  
10 computer 380, information is retrieved from the database  
390 and the response data is prepared.

When the terminal handler 420 receives the  
response data 280 from the host computer 380, it  
transfers the response data 280 to the terminal handler  
15 400 through the communication line 450 based on the  
inquiry code 290 of the response data 280. The terminal  
handler 400 determines the terminals to which the  
response data 280 is to be distributed, that is, the  
terminals 470 to 480 in the present example, based on  
20 the inquiry code 290 and the group number 300 of the  
response data 280, and the table 320, and sequentially  
sends the response data 280 to those terminals.

Let us now consider a case where data for  
inquiring about information in the database 430 of the  
25 terminal handler 420 is sent from the terminal 490.  
The inquiry code 210 is "4" indicating the inquiry pattern  
(the inquired information is present in the database 430  
of the terminal handler 420) and the group number 220



1 the host computer 360 and the database 410 of the  
terminal handler 400.

Besides the above processings, value added  
information obtained by processing the information  
5 contained in the host computer or the terminal handler  
may be distributed as the response data 280 by setting  
different inquiry pattern into the inquiry code 210 of  
the inquiry data 200, or the value added information  
stored in the inquiry information 230 of the inquiry data  
10 200 may be distributed as it is as the response data  
280.

The information distribution service processing  
in the network system having two host computers and  
two terminal handlers has been described. It is  
15 apparent that the above processing is equally applicable  
when the numbers of the host computers and the terminal  
handlers or the number of terminal groups further  
increase.

Fig. 9 shows a inquiry data format in other  
20 embodiment of the present invention. In the present  
embodiment, a reason for inquiry is set in inquiry data  
which is sent, and response information and inquiry  
reason are combined as response data, which is distri-  
buted so that users at receiving terminals can better  
25 understand the response data.

In Fig. 9, inquiry data 550 includes a inquiry  
code 560, a group number 570, inquiry information 580  
as well as inquiry reason 590. When the inquiry data 550

1 is sent to the host computer 110 or the terminal  
handler 140 shown in Fig. 2 or the host computers 360  
and 380 or the terminal handlers 400 and 420 shown in  
Fig. 7, the process shown in Fig. 1 or Fig. 8 is  
5 carried out and the response data is distributed to  
the terminals which made a contract with the inquiry  
terminal. A response data format therefor is shown in  
Fig. 10. In Fig. 10, response data 600 includes a  
inquiry code 610, a group number 620, response information  
10 630 and a inquiry reason 640. Since the response  
information 630 and the inquiry reason 640 are displayed  
at each terminal, the user can better understand the  
response information.

Fig. 11 shows a table format in other embodi-  
15 ment of the present invention. In the present embodiment,  
when the terminals are grouped, service classes are  
established in the contract in accordance with the rank  
of the service content, and the contents of the response  
information for the same inquiry are classified in  
20 accordance with the service class (which varies in  
accordance with a contract fee) and they are distributed  
to the terminals. In this manner, fine information  
services are attained. A management program therefor  
is loaded into the host computer and the terminal  
25 handler in the system generation stage.

In Fig. 11, the table 650 includes a group  
number 660, a inquiry code 670, a service class 680 and  
a terminal number 690. The table 650 indicates that

1 the terminals (terminal numbers) 690 which receive the  
response data for the same inquiry code 670 are classified  
into several service classes 680. Accordingly, when  
the inquiry data 200 shown in Fig. 3 is sent to the  
5 terminal handler 140 shown in Fig. 2 or the terminal  
handlers 400 and 420 shown in Fig. 7, the service  
classes of the terminals to which the response data is  
to be distributed are examined based on the table 650  
and the response information for the respective service  
10 classes are prepared. The response data 380 having  
the corresponding response information set therein are  
distributed to the respective terminals. In this  
manner, fine information services are attained.

Fig. 12 shows a inquiry data format in other  
15 embodiment of the present invention. In the present  
embodiment, when it is necessary to send the same data  
to other than the terminals which have previously  
contracted, such sending is permitted. For example,  
when a receiver of the information wants to receive  
20 the information services on a trial basis before he/she  
formally contracts, the present embodiment is appli-  
cable.

In Fig. 12, query data 700 includes a inquiry  
code 710, a group number 720, inquiry information 730  
25 and an additional terminal number 740. When the inquiry  
data 700 is sent to the host computer and the terminal  
handler 140 shown in Fig. 2 or the host computers 360  
and 380 and the terminal handlers 400 and 420 shown

1 in Fig. 7, the process shown in Fig. 1 or Fig. 8 is  
carried out and the response data is distributed to  
the terminals which have made a contract with the inquiry  
terminal and the response data is also distributed to  
5 the terminal corresponding to the additional terminal  
number 740 set in the inquiry data 700. In this manner,  
flexible response to the change of number of terminals  
is attained.

Referring to Figs. 13 to 16, other embodiment  
10 of the present invention which relieves a system load  
due to occurrence of same inquiry is explained.

Fig. 13 shows a flow chart of operational  
steps of the system from the occurrence of inquiry to  
the transmission of response data. The present embodi-  
15 ment is explained with reference to the flow chart.

Whether a received inquiry data is the same as  
that which has been received in a predetermined time period  
or not is checked based on a inquiry code 910 of the  
received inquiry data 900 shown in Fig. 14 and a timer  
20 table 940 shown in Fig. 15 (step 800). If it is same,  
the received inquiry data is discarded, and a group  
number 920 and a terminal number 930 in the inquiry data  
900 are registered into a group number area 956 and a  
terminal number area 958 of a list 954, which is  
25 connected to a list queue (step 810). If it is not  
same, a timer table 940 is newly prepared, the inquiry  
code 942, the group number 944, the terminal number  
946 and the timer value 948 are registered therein,

1 and the timer table is connected to the timer queue  
(step 820).

Then, whether the processing in the terminal handler is possible or not is checked (step 830). If  
5 it is not possible, the inquiry data 900 is sent to the host computer through the communication line (step 840). When the response data 962 shown in Fig. 16 is later received from the host computer (step 850), the process proceeds to a step 880.

10 In the step 830, if the processing in the terminal handler is possible, the inquiry data 900 is sent to the corresponding application program (step 860). When the response data 962 is later received from the application program (step 870), the corresponding  
15 timer table 940 is searched based on the inquiry code 964, the group number 966 and the terminal number 968 of the response data 962. A list 954 which contains the group numbers 956 and the terminal numbers 958 of the terminals which have requested the response data  
20 are traced back by the pointer 2, and the response data 962 is sent to all of the corresponding terminals (step 880).

In the present embodiment, the transmission of unnecessary inquiry data and response data between  
25 the host computer and the terminal handler is reduced and the transmission of unnecessary response data between the terminal handler and the terminal is eliminated. As a result, the increase of the loads of

- 1 the host computer and the terminal handler is suppressed and the communication cost is reduced. Assuming that one terminal group has made a contract to receive stock value information services, the response data to
- 5 the inquiry data issued from the terminal used by an expert in the group is distributed to all terminals in the group. Accordingly, non-expert users can get value added information without inquiring by themselves.

CLAIMS:

1. In an information communication network system comprising at least one host computer having a database server function, at least one terminal handler and a plurality of terminals connected to said terminal handler through a communication line,

a method for information distribution services comprising the steps of:

receiving, by said terminal handler connected to the terminals, inquiry data sent from at least one of the terminals to one of said host computer and said terminal handler;

determining, by said terminal handler, whether the inquiry data can be processed by said terminal handler or not, and if it cannot be processed, sending the received inquiry data to the host computer; and

broadcasting response data for the inquiry data received from the host computer or the terminal handler to ones of said terminals designated by a management table provided in the terminal handler, said management table defining a relationship between the inquiring terminals and distribution destination terminals.

2. A method for information distribution services according to Claim 1 wherein said terminal handler has a database server function, and one of said host computer and said terminal handler responds to the reception of the inquiry data to generate value added

information including statistical data or modified data prepared by processing the information stored in the database, as the response data.

3. A method for information distribution services according to Claim 1 further comprising the step of sending value added information prepared by one of the terminals to the terminal handler associated with said one terminal handler, as the response data.

4. A method for information distribution services according to Claim 1 wherein a request format issued by the terminal includes a inquiry data area, and a inquiry reason statement area, and the response data is written into the inquiry data area, and the inquiry reason statement is distributed together with the response data.

5. A method for information distribution services according to Claim 2 wherein said management table contains distribution management data to allow the distribution of value added information of different degrees of detail, as the response data, in accordance with contracted service classes of the distribution destination terminals.

6. A method for information distribution services according to Claim 1 further comprising the step of overriding the content of the management table in response to the direction from the terminal requesting the distribution so that the destination terminals of the response data are dynamically changed.



7. A method for information distribution services according to Claim 1 further comprising the steps of:

checking, by the terminal handler, whether same inquiry data has been sent from a plurality of terminals to the terminal handler in a predetermined time period;

sending, when such same inquiry data has been sent, only one inquiry data from the terminal handler to the host computer; and

receiving, by the terminal handler, the response data from the host computer and distributing the response data to all inquiring terminals.

8. In an information communication network comprising a plurality of host computers each having a database server function, a plurality of terminal handlers each having a database server function and a plurality of terminals connected to said terminal handlers through a communication line,

a method for information distribution services comprising the steps of:

issuing inquiry data from one of said terminals to one of said host computers and said terminal handlers,

receiving the inquiry data by the terminal handler connected to the inquiry data issuing terminal, and sending the received inquiry data to the associated terminal handler and host computer for processing the inquiry data; and

receiving, by the inquired terminal handler, response data for the inquiry data prepared by the processing terminal handler or host computer and distributing the response data to distribution destination terminals registered in a management table provided in the terminal handler.

9. A method for information distribution services according to Claim 8 wherein each terminal handler checks whether the same inquiry has been received from the terminals connected thereto in a predetermined time period or not, and registers such terminals in the management table, sends only one inquiry data to the host computer after the elapse of the predetermined time period for the processing by the host computer, and distributes the response data from the host computer to all inquiry data issuing terminals registered in the management table.

10. An information service network system comprising:

- at least one host computer including a database to provide a database server function;

- at least one terminal handler including another database to provide a database server function; and

- a plurality of terminals connected to said terminal handler through a communication line;

- said terminal handler including:

- means for determining based on a system generation definition, in response to a inquiry request

issued by the terminal, whether the inquiry is to be processed by said host computer or said terminal handler,

a management table containing management information designating distribution destination terminals of response data for the inquiry prepared by said host computer or said terminal handler, and

distribution means for broadcasting the response data to the registered terminals based on said management table.

11. An information service network system according to Claim 10 wherein said terminal handler further includes means for dynamically updating the management information in accordance with the direction from an authorized terminal.

12. An information service network system constructed substantially as herein described with reference to and as illustrated in Figs. 1 and 3 to 8; or Figs. 9 to 11; or Fig. 12; or Figs. 13 to 16 of the accompanying drawings.